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Original article

Women's ethnomedicinal knowledge in the rural community of São José da Figueira, Durandé, Minas Gerais, Brazil

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ABSTRACT

São José da Figueira is a rural community which economy is based on small-sized family-owned agricultural and dairy farms. Rural communities often possess medicinal plant knowledge because not only does the rural lifestyle promote this but also because these communities coexist with a wide variety of plants. The aim of this study was to survey the knowledge of the community on plants and their medicinal uses. For data collection, semi-structured interviews and guided tours were carried out. Data were analyzed through the Major Use Agreement. All of the 34 informants were women. Plants were the first choice for use for primary health care by 75% of the interviewees. Of the total of 165 species identified, most species are exotic (45%), obtained by collection in home gardens (88%), and of herbaceous habits (65.7%). Leaves were the plant parts most often used (52%). Decoction was the most widely used form of preparation (41%), and oral intake was cited most often (66.4%). *Leonurus sibiricus* showed the highest value of Major Use Agreement (77.3%), in agreement with its popular use to treat diarrhea. The information obtained in this study showed that women in the community have extensive knowledge regarding medicinal plants. The home garden is a space where useful medicinal plants are maintained, and is the main location where these plants are gathered.

Introduction

The use of medicinal plants is widespread in Brazilian popular culture. Accumulated from various sources and influenced by different ethnic traditions, familial knowledge of plants is usually transmitted orally and generationally. Rural communities often possess much of this knowledge because not only does the rural lifestyle promote and enhance family life but also these communities cultivate and coexist with a wide variety of local plant species.

In recent years, ethnobotanical studies, in addition to approaching traditional populations as indigenous groups maroons and "caiçaras", have targeted small rural populations (Pinto et al., 2006; Castro et al., 2011; York et al., 2011; Amri and Kisangau, 2012). In these populations, economic activities are mainly related to food production through agriculture and animal breeding. It is common to have home gardens where families grow a variety of species for basic food and health care. Kumar and Nair (2004) noted that the home garden is a unit of landscape where the established interactions meet the economic, social and cultural needs of the

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group involved, which may reflect the profile of use of the medicinal species that are cultivated. Several researchers have previously documented the importance of home gardens (Moura and Andrade, 2007; Galluzzi et al., 2010, Freitas et al., 2012; Pereira et al., 2012).

Medicinal plants found in home gardens are often the only resource available to treat diseases, even though the Brazilian Unified Health System (SUS) extends to the countryside. SUS does not fully meet the needs of these communities because of the poor-quality of care provided, or because of the low buying power of the patients, which makes it difficult for them to purchase prescription drugs, or even because of cultural issues. Patients are more likely to accept herbal and home remedies and prefer to treat themselves with these rather than with synthetic drugs. Since 2006, the Brazilian federal government has been instituting policies, as the National Programme on Medicinal Plants and Herbal Medicines, which fosters safe and rational access to medicinal plants and the sustainable exploitation of biodiversity establishing guidelines for actions to strengthen and acknowledge local health practices, encouraging the use of the flora and fauna diversity, the respect and appreciation for popular and traditional practices, and the use of herbal and home remedies (Ministério da Saúde, 2006a,b).

Therefore, knowing how people use natural resources is useful to develop a fair and equitable health-care system (Pereira et al., 2012). The understanding of the popular knowledge regarding medicinal plants contributes to make this knowledge valued and preserved, since environmental degradation and the infusion of new cultural values into traditional lifestyles may reduce the empirical knowledge passed on to future generations (Voeks and Leony, 2004; Scherrer et al., 2005; Estomba et al., 2006; Philander et al., 2011; Mathez-Stiefel and Vandebroek, 2012).

In this study, we recorded the use of plants with medicinal properties in the rural community of São José da Figueira, and identified the importance of home gardens to garner these plants. We provide a profile of the use of medicinal species of this community, with a the prospect for their eventual use in the local Unified Health System.

Materials and methods

Study area

The study was conducted in the rural community of São José da Figueira in the Municipality of Durandé, state of Minas Gerais, located within the Atlantic Forest biome. This area has a humid subtropical climate, mean altitude of 691 m and a total population of about seven thousand inhabitants, of whom 52% live in rural areas (IBGE, 2010). Coffee cultivation and dairy farming are the main economic activities, and are celebrated in the annual "Durandé Coffee with Milk Festival".

São José da Figueira, located about 9 km from the municipality center, is a small rural village with a center with paved streets, a square, a church, a soccer field, a public secondary school, a sports court, and with modest but growing commercial activity (Fig. 1). The local medical unit of the Family Health Programme provides medical consultations twice a week and distributes drugs prescribed by its doctor. The approximately 400 inhabitants live mainly in farms, the social organization is based on family farming and the main crop is coffee. Men are responsible for agricultural activities on their own properties, and during coffee harvest and process they also provide temporary services to other producers. Women are housewives and occasional farmworkers, and are responsible for the care of the family, which includes cultivating the main species used for subsistence and food preparation. They tend to their homes, children and gardens.

Figure 1 - The central region of São José da Figueira (**A**) and the Catholic Church (**B**).

Ethnobotanical data collection

The fieldwork was conduced from June 2009 to December 2011. The first contact with the community was through a meeting held in the local church where the goals of the survey were presented, questions were answered, and the community agreed to the study. The informants were selected initially by active search (intentional search) for people who are directly responsible for family health care and then by the snowball technique. Semi-structured questionnaire based interviews were conducted at the residences of individual informants. The questionnaire included questions such as: Do you use plants in your daily life? For what purpose do you use plants? Do you use medicinal plants? For what kind of health problems do you use plants? How do you prepare home remedies? How do you use medicinal plants? Socioeconomic data about the informants, including name, sex, age, educational level and place of birth were also recorded. Additionally, the "guided tour" technique was used to obtain additional information, complement the information obtained in the interview, and collect specimens of the plants mentioned (Alexiades, 1996). This research complied with the current bioethical standards and guidelines for studies involving human beings (Resolution No. 466/2013 of the National Health Council).

Plant collection and identification

Species that were identified as medicinal during the interviews were collected with the help of the local informants, and were pressed and dried according to standard botanical practices. The voucher specimens were identified by comparison with herbarium specimens, specialized literature, and/or by specialists. These specimens were incorporated into the Melo Leitão Herbarium at the Federal University of Espírito Santo or the Botanical Institute Herbarium at the Federal University of Rio de Janeiro.

The spelling of the scientific binomial was confirmed in recent taxonomic revisions and/or using the W3 tropics

(Missouri Botanical Garden VAST-Vascular tropics) and IPNI (2013) databases. The status of species (native, exotic and naturalized) was determined by consulting the lists of Silva (2008) and the Species of Flora of Brazil (2013).

Data analysis

To establish the relative importance of the species, we used the quantitative approach described by Amorozo and Gély (1988), *i.e.*, the percentage of Major Use Agreement of the plant (MUA). The percentage of MUA was calculated as: MUA = FL × CF. FL is the fidelity level and is determined as the ratio between the number of informants who independently cited the use of a species for the same major purpose (MU), and the total number of informants who mentioned any use for the species (TU). The resulting number was multiplied by a hundred (FL=MU/TU × 100). To avoid bias between the species cited by many informants and those cited by few informants, the value of the FL found was multiplied by a correction factor (CF), which corresponds to the ratio between the number of informants who mentioned the species for any use (TU) and the number of informants who cited the most popular species (in this study *Citrus sinensis* received 22 citations).

Results and discussion

Thirty-four informants were interviewed; all were females, between the ages of 28 and 84 years, and all had lived in the community for at least 10 years. The women play an important role in the primary health care of their families. This is generally a consequence of the division of labor by gender, where women spend more time at home and in the home garden, and have greater responsibility in the health care of the children, grandchildren and other members of the family, diagnosing illness and providing the sundry plant treatments for their ailments (Begossi et al., 2002; Voeks and Leoni, 2004; Voeks, 2007; Camou-Guerrero et al., 2008; Galluzzi et al., 2010, Amri and Kisangau, 2012; Silva et al., 2012).

For primary health care, the use of plants was the first choice of 75% of the informants, followed by a doctor consultation (18%); obtaining information from the pharmacy (4%); and "other" (3%), which includes "benzedeiras" (female faith healers) and the use of mineral clay. The preference for medicinal plants is not unique to this region, having also been observed in studies by Pinto et al. (2006), Zeni and Bosio (2011) and Silva et al. (2012). According to the WHO, about 80% of the population in developing countries use some kind of traditional medicine for primary health care, and 85% of these treatments involve medicinal plants. This preference for the use of plants in primary care is strongly related to cultural issues (York et al., 2011), since the organoleptic characteristics of plants are important elements in popular culture, lending credibility to the preparations and contrasting with most industrialized medicines, which are often odorless and tasteless (Silva et al., 2012).

The women from the rural community of São José da Figueira, in addition to the medicinal uses (71%), mentioned the use of plants for edible purposes (21%) as condiments, fruits and salads, ornamental (4%), firewood (3%) and construction (1%).

The informants reported a total of 204 plants used for medicinal purposes. Of these, 148 were identified to the species level, fourteen to genus and three to family (Chart 1). Among the identified species, 45% were exotic and obtained mainly by gathering in home gardens (88%), demonstrating that these spaces contain a small collection of plant species that are often used by the family, and indicating the importance of the home gardens. Plants that are not grown in the home gardens may be gathered from the forest (5.5%), from disturbed habitats (4.5%), or purchased from local shops (2%). Most of the species listed in the survey are herbaceous (65.7%), followed by arboreal (19.0%), shrubs (12.5%) and climbing/epiphytic (4.8%) habits. The predominance of herbs may stem from the ease of cultivating them in home gardens, and also that the most commonly used botanical families (Asteraceae, Lamiaceae and Solanaceae) are herbaceous. Arboreal species are usually found in low numbers in the gardens, mostly because of their great demand for space (Galluzzi et al., 2010). The large number of exotic (45%) and naturalized species (20%) reflects their wide distribution and ease of cultivation. This feature, together with the predominant herbaceous habit and occurrence in home gardens may indicate that the species used are predominantly weeds. Weeds are plants that are successful in disturbed environments, short-lived, fast-growing and, often herbaceous (Stepp, 2004). Widely utilized medicinal plants need to be abundant and accessible; therefore, plants that are near will be preferred. The issue of accessibility may be part of the reason that weeds are significant represented in the medicinal flora of different rural communities (Stepp and Moerman, 2001).

Almost all the residences in this rural community have home gardens, most of these are located close to the family home and provide food for the daily meals (Fig. 2). Combined with the cultivation of vegetables, medicinal species help constitute the biodiversity of the home garden, mainly those plants used for primary family health care are selected. All the women interviewed stated that they were responsible for tending the home garden. As in other studies, in São José da Figueira the women are of significant importance in managing the home garden, deciding which species will be cultivated and selecting especially plants with a medicinal uses (Camou-Guerreiro et al., 2008; Galluzzi et al., 2010; Castro et al., 2011). The collection and exchange of seeds and seedlings between neighbors is a common practice, which is of special importance for the preservation of knowledge, contributing to the transmission of information about cultivation, use and preparation methods, and preservation of the diversity of these species (Ban and Coomes, 2004; Oakley, 2004;

Figure 2 - Two of the home gardens of the rural properties visited.

Chart 1
Species of medicinal plants cited by women of the São José da Figueira community, Durandé, Minas Gerais state, Brazil.

Family / Scientific binomial	common name	HAB	OC	Status
ADOXACEAE				
Sambucus australis Cham. and Schltdl.	sabugueiro/buquê-de-noiva	Sh/Tr	HG	N
ALISMATACEAE				
Echinodorus macrophyllus (Kunth) Micheli	chapéu-de-couro	H	HG	N
AMARANTHACEAE				
Alternanthera brasiliana (L.) Kuntze	terramicina	H	HG	E
Amaranthus viridis L.	cariru-de-porco	H	HG	NT
Beta sp.	beterraba	H	HG	E
Dysphania ambrosioides (L.) Mosyakin and Clemants	erva-de-santa-maria	H	HG	N
Gomphrena globosa L.	perpétua	H	HG	NT
Iresine herbstii Hook.	sangue-de-cristo	H	HG	E
AMARYLLIDACEAE				
Allium cepa L.	cebola	H	HG	E
Allium fistulosum L.	cebolinha-de-folha	H	HG	E
Allium sativum L.	alho	H	HG	E
ANACARDIACEAE				
Anacardium occidentale L.	caju	Tr	HG	N
Anacardium sp	ipê	Tr	F	N
Mangifera indica L.	manga	Tr	HG	E
Schinus terebinthifolius Raddi	aroeira	TR	HG	N
ANNONACEAE				
Annona muricata L.	graviola	Tr	HG	E
APIACEAE				
Apium graveolens L.	aipo	H	HG	E
Daucus carota L.	cenoura	H	HG	E
Foeniculum vulgare Mill	funcho	H	HG	NT
Petroselinum crispum (Mill.) Fuss	salsa	H	HG	E
Pimpinella anisum L.	erva-doce	H	HG	E
ARACEAE				
Xanthosoma sagittifolium (L.) Schott	taioba	H	HG	E
ARECACEAE				
Cocos nucifera L.	coco-da-bahia	Tr	C	NT
ASPARAGACEAE				
Agave americana L.	piteira	H	HG	E
ASTERACEAE				
Acanthospermum australe (Loefl) Kuntze	carrapichinho-rasteiro	H	HG	N
Achyrocline satureioides (Lam.) DC.	marcelinha	H	HG	N
Ageratum conyzoides L.	erva-de-são-joão	H	HG	N
Arctium minus (Hill) Bernh.	bardana	H	HG	E

(Cont.)

Chart 1 *cont.*

Family / Scientific binomial	common name	HAB	OC	Status
Artemisia absinthium L.	losna	H	HG	E
Baccharis crispa (Less.) DC.	carqueja	H	HG	N
Bidens pilosa L.	picão	H	HG	NT
Calendula sp.	calêndula	H	HG	E
Chrysanthemum paludosum Poir.	margarida	H	HG	E
Emilia fosbergii Nicolson	serralha-branca	H	HG	N
Erechtites valerianifolius (Link ex Spreng.) DC.	capiçova/capiçoba	H	HG	N
Gerbera sp.	gérbera	H	HG	E
Lactuca sativa L.	alface	H	HG	E
Matricaria chamomilla L.	camomila	H	HG	E
Mikania SP.	guaco	L	HG	N
Sonchus oleraceus L.	serralha	H	HG	N
Solidago chilensis Meyen	arnica	H	HG	N
Tagetes erecta L.	cravo-de-defunto	H	HG	NT
Tanacetum parthenium (L.) Sch. Bip.	artemísia	H	HG	E
Taraxacum officinale F.H. Wigg.	dente-de-leão	H	HG	E
Vernonanthura phosphorica (Vell.) H. Rob.	assa-peixe	Sh	DH	N
BALSAMINACEAE				
Impatiens balsamina L.	beijo-branco	H	HG	E
BEGONIACEAE				
Begonia coccinea Hook.	begônia	H	HG	N
BIGNONIACEAE				
Jacaranda semiserrata Cham.	carobinha	Tr	F	N
BIXACEAE				
Bixa orellana L.	urucum	Tr	HG	N
BORAGINACEAE				
Symphytum officinale L.	confrei	H	HG	E
BRASSICACEAE				
Nasturtium officinale L.	agrião	H	HG	
Brassica oleracea var. capitata L.	repolho	H	HG	E
Brassica oleraceae L.	couve	H	HG	E
Brassica sp.	mostardeira	H	HG	E
Lepidium virginicum L.	mastruço	H	HG	NT
BROMELIACEAE				
Ananas comosus (L.) Merr.	abacaxi	H	HG	N
CACTACEAE				
Hylocereus undatus (Haw). Britton and Rose	flor-da-noite	H	HG	N
CARICACEAE				
Carica papaya L.	mamão	Tr	HG	NT

(Cont.)

Chart 1 *cont.*

Family / Scientific binomial	common name	HAB	OC	Status
COMMELINACEAE				
Tradescantia pallida (Rose) D.R. Hunt	onda-do-mar	H	HG	E
CONVOLVULACEAE				
Ipomoea batatas (L.) Lam.	batata-doce	L	HG	NT
Ipomoea grandiflora (L.f.) Lam.	trepadeira-roxa	L	HG	E
COSTACEAE				
Costus spicatus (Jacq.)Sw.	cana-de-macaco	H	HG	N
CRASSULACEAE				
Kalanchoe gastonis-bonnieri Raym.-Hamet and H.Perrier	saião	H	HG	
CUCURBITACEAE				
Citrullus lanatus Matsum (Thunb.) and Nakai	melancia	H	HG	E
Cucumis sativus L.	pepino	H	HG	E
Cucurbita L.	abóbora	H	HG	N
Momordica charantia L.	melãozinho-de-são-caetano	L	HG	E
Sechium edule (Jacq.) Sw.	chuchu	L	HG	E
EQUISETACEAE				
Equisetum arvense L.	cavalinha	H	HG	E
EUPHORBIACEAE				
Euphorbia serpens Kunth	quebra-pedra-rasteiro	H	HG	E
Jatropha multifida L.	bálsamo ou merthiolate	H	HG	E
Manihot esculenta Crantes	mandioca	Sh	HG	N
Phyllanthus niruri L.	quebra-pedra	H	HG	N
Ricinus communis L.	mamona	Sh	HG	N
FABACEAE				
Unidentified 1	braúna-branca	Tr	F	
Acacia plumosa Lowe	arranha-gato	Tr	DH	N
Bauhinia cheilantha (Bong.) Steud.	pata-de-vaca	Tr	HG	N
Cajanus cajan (L.) Huth	feijão-guandu	Sh	HG	NT
Dioclea violacea Mart. ex Benth.	olho-de-boi/coronha	Tr	F	N
Erythrina speciosa Andrews	pau-sabão/pau-cebola/ mulungu	Tr	F	N
Melanoxylon brauna Schott	braúna-preta	Tr	F	N
Mimosa pudica L.	dormideira	H	HG	N
Senna sp.	fedegoso	Tr	HG	N
Stryphnodendron sp.	barbatimão	Tr	F	N
LAMIACEAE				
Aloysia gratissima (Gillies and Hook.) Tronc.	alfazema-de-árvore	Sh	HG	E
Leonotis nepetifolia (L.) R. Br.	cordão-de-frade	H	HG	NT
Leonurus sibiricus L.	macaé	H	HG	E

(Cont.)

Chart 1 *cont.*

Family / Scientific binomial	common name	HAB	OC	Status
Melissa officinalis L.	erva-cidreira-da-horta	H	HG	E
Mentha arvensis L.	vick	H	HG	E
Mentha piperita var.citrata (Ehrh.) Briq.	alevante	H	HG	E
Mentha pulegium L.	poejo	H	HG	NT
Mentha spicata L.	hortelã	H	HG	NT
Ocimum basilicum L.	manjericão	H	HG	E
Ocimum americanum L.	alfavaca	H	HG	NT
Ocimum gratissimum L.	alfavaca-miúda	H	HG	NT
Plectranthus amboinicus Spreng (Lour.)	hortelã-pimenta	H	HG	E
Plectranthus barbatus Andrews	boldo	H	HG	E
Rosmarinus officinalis L.	alecrim	Sh	HG	E
LAURACEAE				
Persea americana Mill.	abacate	Tr	HG	E
Nectandra reticulata (Ruiz and Pav.) Mez.	canela-de-árvore	TR	F	N
LECYTHIDACEAE				
Lecythis sp.	sapucaia	Tr	F	N
LINDERNIACEAE				
Torenia fournieri Linden ex E. Fourn.	amor-perfeito	H	HG	E
LORANTHACEAE				
Struthanthus sp.	erva-de-passarinho	L	DH	N
LYTHRACEAE				
Punica granatum L.	romã	Sh	HG	E
Unidentified 2	sete-sangria	H	HG	
MALPIGUIACEAE				
Malpighia glabra L.	acerola	Sh	HG	E
MALVACEAE				
Gossypium hirsutum L.	algodão	Sh	HG	NT
Hibiscus esculentus L.	quiabo	Sh	HG	E
MORACEAE				
Morus alba L.	amora-de-árvore	Sh	HG	E
MUSACEAE				
Musa sp	bananeira	H	HG	E
MYRTACEAE				
Eucalyptus grandis W.Moinho ex Maiden	eucalipto	Tr	HG	E
Psidium guineense Sw.	araçá	Tr	DH	N
Eugenia uniflora L.	pitanga	Sh	HG	N
Psidium guajava L.	goiabeira	Tr	HG	N
NYCTAGINACEAE				
Mirabilis jalapa L.	maravilha ou bonina	H	HG	NT
OXALIDACEAE				
Averrhoa carambola L.	carambola	Tr	HG	NT

(Cont.)

Chart 1 *cont.*

Family / Scientific binomial	common name	HAB	OC	Status
Oxalis sp.	azedinha ou trevo	H	HG	E
PASSIFLORACEAE				
Passiflora edulis Sims	passiflora ou maracujá	L	HG	N
PHYTOLACCACEAE				
Petiveria alliacea L.	guiné	H	HG	E
PIPERACEAE				
Piper aduncum L.	jaborandi	H	DH	N
PLANTAGINACEAE				
Plantago major L.	tanchagem	H	HG	NT
Scoparia dulcis L.	vassourinha-doce	H	HG	N
POACEAE				
Andropogon bicornis L.	sapé/rabo-de-burro	H	HG	N
Cenchrus echinatus L.	tiririca	H	HG	N
Coix lacryma-jobi L.	conta-de-lágrimas	H	DH	NT
Cymbopogon citratus (DC.) Stapf	erva-cidreira-capim	H	HG	NT
Eleusine indica (L.) Gaertn	pé-de-galinha	H	HG	NT
Melinis minutiflora P.Beauv.	capim-gordura	H	HG	NT
Saccharum officinarum L.	cana-de-açúcar	H	HG	NT
Zea mays L.	milho	H	HG	NT
POLYGALACEAE				
Polygala paniculata L.	gelol	H	HG	N
POLYGONACEAE				
Homalocladium platycladum (FJ Müll.) LH Bailey	carquejinha ou solitária	H	HG	E
Polygonum hydropiperoides Michx.	erva-de-bicho	H	HG	N
PTERIDACEAE				
Adiantum raddianum C.Presl	avenca	H	HG	
ROSACEAE				
Eriobotrya japonica (Thunb.) Lindl.	ameixeira	Tr	HG	NT
Fragaria vesca L.	fragaia	H	HG	NT
Rosa alba L.	rosa-branca	Sh	HG	E
Rosa x grandiflora Charb	rosa-vermelha	Sh	HG	E
Malus sp.	maçã	Sh	C	E
RUBIACEAE				
Coffea arabica L.	café	Sh	HG	NT
RUTACEAE				
Citrus sp.	mexerica	Tr	HG	E
Citrus aurantiifolia (Christm.) Swingle	lima	Tr	HG	E
Citrus aurantium L.	limoeiro	Tr	HG	NT
Citrus medica L.	cidra	Tr	HG	NT
Citrus sinensis (L.) Osbeck	laranjeira	Tr	HG	NT
Ruta graveolens L.	arruda	H	HG	E

(Cont.)

Chart 1 *cont.*

Family / Scientific binomial	common name	HAB	OC	Status
SOLANACEAE				
Brunfelsia uniflora (Pohl) D. Don	manacá	Sh	HG	N
Capsicum annuum L.	pimentão	H	HG	N
Capsicum frutescens L.	pimenta	H	HG	NT
Nicotiana tabacum L.	fumo	H	HG	NT
Solanum aculeatissimum Jacq.	juá-amarelo	Sh	HG	N
Solanum americanum Mill.	erva-moura	H	HG	N
Solanum cernuum Vell.	panaceia	Sh	HG	N
Solanum aethiopicum L.	jiloeiro	H	HG	E
Solanum melongena L.	berinjela	H	HG	E
Solanum paniculatum L.	jurubeba	Sr	HG	E
Solanum pimpinellifolium L.	tomateiro	H	HG	E
Solanum tuberosum L.	batata	H	C	E
URTICACEAE				
Cecropia sp.	umbaúba	Tr	DH	N
Urera bacifera (L.) Gaudich. ex Wedd.	urtiga	Sh	DH	E
VERBENACEAE				
Lippia alba (Mill.) NE Br. ex Britton and P. Wilson	cambará/peitoral-cereja	H	HG	N
Stachytarpheta cayennensis (Rich.)Vahl	gervão	H	HG	N
VITACEAE				
Vitis vinifera L.	uva	L	HG	E
XANTHORRHOEACEAE				
Aloe sp.	babosa	H	HG	E
ZINGIBERACEAE				
Hedychium coronarium J. König	mariazinha	H	HG	NT
Zingiber officinale Roscoe	gengibre	H	HG	E

HAB, habitat; H, Herb; Sh, Shrub; Tr, tree; L, liana; OC, Occurrence; HG, home garden; DH, disturbed habitats; F, forest; C, commercial course; N, native; E, exotic; NT, naturalized.

Galluzzi et al., 2010). Contact with other women likely provides better opportunities to inquire about the contents of other home gardens and to exchange plants accordingly (Ban and Coomes, 2004).

We identified medicinal plants belonging to 59 different botanical families; the most important belonged to Asteraceae (12.5%) and Lamiaceae (8.3%). Both families figured prominently in several ethnobotanical surveys conducted around the world and also in Brazil (Moerman et al., 1999; Camou-Guerrero et al., 2008; Castro et al., 2011; Cakilcioglua et al., 2011; Silva et al., 2012). The family Asteraceae is large, comprised of approximately 23,000 species and 1,535 genera (Bremer, 1994), and widely distributed in Brazil along different vegetation formations (Hind, 1993). Members of this family synthesize various secondary metabolites, especially sesquiterpene lactones, in addition to volatile oils and terpenoids (Cronquist, 1981). Perhaps these secondary metabolite profiles, together with the large number of species, are primarily responsible for the relevance of this family in traditional medicine. Many species of Asteraceae family are typically identified as weeds occurring in anthropogenic environments (Daehler, 1998; Stepp and Moerman, 2001), and are among the first species to emerge in the field after the soil is prepared for planting (Cardina et al., 2002). This may contribute to the high rate of citations of species of this family in rural communities where the home gardens are the main source of medicinal plants (Pinto et al., 2006).

The medicinal species most often cited by the respondents were *C. sinensis* (32.8%), *L. sibiricus* (29.7%) and *P. major, M. spicata*, and *K. gastonis-bonnieri* (26.5%). The used parts of the plant mentioned more often were the leaves (52%), followed

by the roots (10%) and the whole plant last (9%), as shown in Fig. 3. Other researchers have also reported that leaves were the most important plant part mentioned in their surveys (Pinto et al., 2006; Zeni and Bosio, 2011; York et al., 2011; Amri and Kisangau, 2012). The use of leaves is mainly a consequence of the herbaceous habit of most of the plants cited, and can also be understood as reflecting the facility of their collection. From the perspective of natural resource conservation, the use of the leaves for medicinal preparations is positive because it does not kill the plant contributing to the maintenance of the species in home gardens.

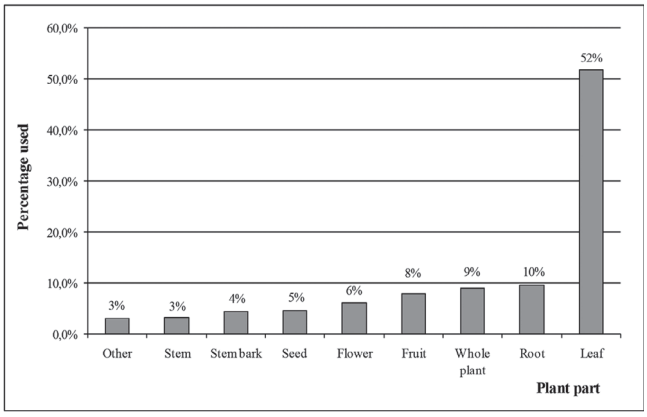

Figure 3 - Plant parts used in medicinal preparations by the women of the rural community of São José da Figueira.

Regarding the preparation method, decoction (boiling the plant parts in water), locally called 'tea', was the most frequently cited (41%), followed by infusion (36%) (pouring hot water over the plant part). Maceration (5%), syrup (4%) and fresh use (3%) were the other preparation methods cited. Merzouki et al. (2000) noted that infusion and decoction predominate because these are inexpensive, rapidly prepared and easily consumed forms of treatment. The most widely used form of administration was oral intake (drink) (66.4%), reflecting the most often-cited forms of preparation, decoction and infusion.

The results for the Major Use Agreement of plants showed that the species with the highest MUA was "Macaé" (*L. sibiricus*) with a 77.3% index, indicated mainly for diarrhea (Table 1). This same indication has been documented in other ethnopharmacological surveys (Coelho de Souza et al., 2004; Christo et al., 2010; Pereira et al., 2012) and some medicinal plant monographs state that it is efficacious against diarrhea causing bacterial agents , *e.g.*, *E. coli* (WHO, 2013). An Informant Consensus such as the Major Use Agreement is one of the ways to define and compare the relative importance of medicinal species for the community studied. This methodology is an important indicator of the possible pharmacological activity of a species, since the more informants indicate a particular use, the greater the confidence in the validity of this information. The information acquired may serve in the future as a reference for pharmacological studies searching for new drugs.

Some species and/or genera that appear in Table 1 with high MUA values have the same use as described by The Brazilian Health Surveillance Agency (Anvisa, 2010). This document, which addresses herbal drugs for which the efficacy and safety of use have been evaluated, describes the use of *P. major* for throat infections and *Equisetum arvense* for kidney problems, in agreement with the main popular indications observed in São José da Figueira. Interestingly, among the most frequently cited species, only *K. gastonis-bonnieri* did not appear among those with a high MUA (Table 1). The women indicated this plant for eight different purposes, and were in agreement for its use in the treatment of pain, a rather nonspecific symptom. This low specificity may indicate that the species may be an adaptogenic plant. Adaptogens are compounds that increase the body's ability to adapt to factors that affect homeostasis and the possible damage that these factors may cause (Panossian and Wagner 2005). In general, its effect is not specific as the adaptogen increases resistance to a broad spectrum of stressful events. Adaptogenic plants have been recommended and used for a variety of indications, suggesting that their bioactive principles are directly related to the systems that regulate homeostasis (immune and central nervous) (Panossian et al., 1999).

Overall, the women of the community demonstrated knowledge about the medicinal plants and their toxicities, and so they use mainly plants that are safe and efficacious in accordance with the scientific literature. They also cared for their family's health, and in their home gardens maintained those species that serve basic needs in family primary health care (the most common ailments), highlighting the importance of home gardens as areas for promoting good health. As reported by Mathez-Stiefel and Vandebroek (2012) for Andean highland communities from Peru and Bolívia, Brazilian rural communities exist in a changing socio-ecological context, resulting from the income distribution promoted by federal government programs, the migration to urban centers, and the improvement of SUS services. In this context of societal change, the women's maintenance of home gardens can contribute to the preservation of these cultural practices; if they were lost, an important part of this popular knowledge would also vanish.

The results of this study can contribute to the creation of a list of locally used medicinal plants, as recommended by the National Programme on Medicinal Plants and Herbal Medicines of the Brazilian Ministry of Health (Ministério da Saúde, 2006a). If these plants are efficacious and safe to use they may be included in the future in health-care programs of the SUS and can be prescribed by health professionals. The use of medicinal plants in the SUS can be an alternative to reduce public spending on medicines, and can facilitate access and integration between popular culture and scientific knowledge. The inclusion of popular health practices as a way to treat and cure illnesses should be done with regard to the existing cultural values, while maintaining respect for the local population.

Authors' contributions

ACT conducted fieldwork and collected plant samples. ACT and NCBS contributed in identification, confection of herbarium specimens, analysis of the data and wrote the manuscript. All

Table 1
Major Uses Agreement (MUA) of medicinal plants cited in the community of São José da Figueira, Durandé, Minas Gerais state, Brazil.

Species*	Informants citing the species (INF)	N° of uses cited	Main use (MU)	INF/ MU	FL	CF	MUA
Leonurus sibiricus	20	10	Diarrhea	17	85.0	0.91	77.3
Gossypium hirsutum	13	7	Infection	10	76.9	0.59	45.5
Pletranthus barbatus	10	5	Stomach	10	100.0	0.45	45.5
Foeniculum vulgare/ Pimpinella anisum	12	7	Calming agent	12	100.0	0.45	45.5
Plantago major	17	9	Oral infection	10	58.8	0.77	45.5
Equisetum giganteum	11	4	Kidneys	9	81.8	0.50	40.9
Eleusine indica	10	3	Influenza	8	80.0	0.45	36.4
Rosmarinus officinalis	12	6	Calming agent	7	58.3	0.55	31.8
Rosa alba	14	7	Throat inflammation	7	50.0	0.64	31.8
Costus spicatus	8	4	Kidneys	7	87.5	0.36	31.8
Achyrocline satureioides	8	2	Diarrhea	7	87.5	0.36	31.8
Psidium guajava	7	2	Diarrhea	7	100.0	0.32	31.8
Matricaria camomila	14	8	Calming agent	6	42.9	0.64	27.3
Citrus aurantium	14	8	Influenza	6	42.9	0.64	27.3
Mentha pulegium	7	4	Childhood influenza	6	85.7	0.32	27.3
Alternanthera brasiliana	7	4	Anti-inflammatory	6	85.7	0.32	27.3
Allium cepa	8	3	Cough	6	75.0	0.36	27.3
Cymbopogon citratus	10	5	Calming agent	6	60.0	0.45	27.3
Hylocereus undatus	8	5	Heart	6	75.0	0.36	27.3
Mentha spicata	17	11	Stomach	6	35.3	0.77	27.3
Plectranthus amboinicus	8	3	Cough	6	75.0	0.36	27.3
Citrus sinensis	22	13	Infection	6	27.3	1.00	27.3
Solidago chilensis	9	7	Body pain	6	66.7	0.41	27.3

FL, Fidelity Level; CF, correction factor.
*Plant species cited by more than three informants.

the authors participated in the design of the study and have read the final manuscript and approved the submission.

Conflicts of interest

The authors declare no conflicts of interest.

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